5-5 Adding and Subtracting Mixed Numbers - Practice and Problem Solving

Add or subtract. Write in simplest form.

9.

$$4\frac{5}{12}$$
$$+6\frac{7}{12}$$

$$4\frac{5}{12}$$
$$+6\frac{7}{12}$$
$$10\frac{12}{12}\,or\,11$$

11.

$$9\frac{4}{5}$$
$$-4\frac{2}{5}$$

$$9\frac{4}{5}$$
$$-4\frac{2}{5}$$
$$5\frac{2}{5}$$

13. $3\frac{3}{8} + 6\frac{5}{8}$

$$3\frac{3}{8}$$
$$+6\frac{5}{8}$$
$$9\frac{8}{8}\,or\,10$$

15. $6\frac{6}{7} - 4\frac{5}{14}$

$$6\frac{6}{7} \quad \rightarrow \quad 6\frac{12}{14}$$
$$-4\frac{5}{14} \qquad -4\frac{5}{14}$$
$$\qquad\qquad\qquad 2\frac{7}{14} \quad \text{or } 2\frac{1}{2}$$

17. $9 - 3\frac{3}{5}$

$$9 - 3\frac{3}{5} = 8\frac{5}{5} - 3\frac{3}{5}$$
$$= 5\frac{2}{5}$$

19. $9\frac{3}{8} - 6\frac{5}{8}$

$$9\frac{3}{8} - 6\frac{5}{8} = 8\frac{11}{8} - 6\frac{5}{8}$$
$$= 2\frac{6}{8} = 2\frac{3}{4}$$

21. $8\frac{1}{3} - 1\frac{5}{6}$

$$8\frac{1}{3} - 1\frac{5}{6} = 8\frac{2}{6} - 1\frac{5}{6}$$
$$= 7\frac{8}{6} - 1\frac{5}{6} = 6\frac{3}{6} = 6\frac{1}{2}$$

23. $10\frac{5}{9} - 3\frac{2}{3}$

$$10\frac{5}{9} - 3\frac{2}{3} = 10\frac{5}{9} - 3\frac{6}{9}$$
$$= 9\frac{14}{9} - 3\frac{6}{9} = 6\frac{8}{9}$$

25.

PAINTING Pamela is going to paint three different rooms. She will need $2\frac{1}{2}$ gallons of paint for the first room, $4\frac{1}{3}$ gallons of paint for the second room, and $3\frac{3}{4}$ gallons of paint for the third room. How much paint does Pamela need for all three rooms?

Add the paint required for the first two rooms.

$$\begin{array}{r} 2\frac{1}{2} \\ +4\frac{1}{3} \\ \hline \end{array} \rightarrow \begin{array}{r} 2\frac{3}{6} \\ +4\frac{2}{6} \\ \hline 6\frac{5}{6} \end{array}$$

Add the paint required for the third room.

$$\begin{array}{r} 6\frac{5}{6} \\ +3\frac{3}{4} \\ \hline \end{array} \rightarrow \begin{array}{r} 6\frac{10}{12} \\ +3\frac{9}{12} \\ \hline 9\frac{19}{12} \end{array} \quad \text{or } 10\frac{7}{12}$$

Pamela will need $10\frac{7}{12}$ gallons of paint for all three rooms.

27.

DISTANCE Neil lives $3\frac{1}{2}$ blocks from Dario's house. Dario lives $2\frac{1}{4}$ blocks from the library, and the video store is $1\frac{1}{8}$ blocks from the library. How far will Neil travel if he walks from his home to Dario's house, the library, and then the video store?

Add the distance traveled from Neil's house to Dario's house to the library.

$$
\begin{array}{r}
3\frac{1}{2} \\
+2\frac{1}{4} \\
\hline
\end{array}
\quad \rightarrow \quad
\begin{array}{r}
3\frac{2}{4} \\
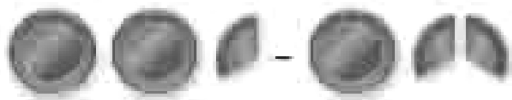+2\frac{1}{4} \\
\hline
5\frac{3}{4}
\end{array}
$$

Add the distance traveled to the video store.

$$
\begin{array}{r}
5\frac{3}{4} \\
+1\frac{1}{8} \\
\hline
\end{array}
\quad \rightarrow \quad
\begin{array}{r}
5\frac{6}{8} \\
+1\frac{1}{8} \\
\hline
6\frac{7}{8}
\end{array}
$$

Neil will travel $6\frac{7}{8}$ blocks if he walks from his home to Dario's house, the library, and then the video store.

Write an addition or subtraction expression for each model. Then add or subtract.

29.

$$2\frac{1}{3} - 1\frac{2}{3} = \frac{2}{3}$$

31.

CHALLENGE Use the digits 1, 1, 2, 2, 3, and 4 to create two mixed numbers whose sum is $4\frac{1}{4}$.

Sample answer:

Explore: You need to find a combination of six digits that creates two mixed numbers whose sum is $4\frac{1}{4}$. The digits to use are: 1, 1, 2, 2, 3, and 4.

Plan: First, make a list of all possible digit pairs. Then, eliminate pairs that cannot be used for the whole numbers because their sum is 4 or greater. Next, try to eliminate incorrect pairs further. Then, guess and check reasonable digits to use for the fractions.

Solve: Possible pairs of digits for the whole numbers:

$1+1=2$ $2+2=4$ $3+4=7$

$1+2=3$ $2+3=5$

$1+3=4$ $2+4=6$

$1+4=5$

Digit pairs you can possibly use are: 1 + 1 and 1 + 2.

If you used 1 + 1, you would need a sum of the fractions to be $2\frac{1}{4}$. Since you do not have the correct digits for that sum, the digit pair 1 and 1 will not work. So, you must use 1 + 2 for your whole numbers and find the fraction parts that work with these two whole numbers using the remaining digits 1, 2, 3, and 4.

So, $1\frac{3}{4}+2\frac{1}{2}=4\frac{1}{4}$.

Check: Your answer is reasonable because all the digits listed and only the digits listed are used, and the sum is the required sum.

33.

Mrs. Matthews bought $2\frac{2}{3}$ pounds of fish, $4\frac{1}{2}$ pounds of chicken, and $3\frac{1}{4}$ pounds of beef. How many pounds did she buy altogether?

A $10\frac{5}{12}$ lb

B $10\frac{1}{3}$ lb

C 10 lb

D $9\frac{3}{4}$ lb

A;
$$2\frac{2}{3}+4\frac{1}{2}+3\frac{1}{4}=2\frac{8}{12}+4\frac{6}{12}+3\frac{3}{12}$$
$$=9\frac{17}{12}=10\frac{5}{12}$$

Mrs. Matthews bought a total of $10\frac{5}{12}$ pound.

Add or subtract. Write in simplest form.

35. $\dfrac{1}{3}+\dfrac{1}{3}$

$$\dfrac{1}{3}+\dfrac{1}{3}=\dfrac{1+1}{3}=\dfrac{2}{3}$$

37. $\dfrac{4}{5}-\dfrac{3}{4}$

The LCD is 20.
$$\dfrac{4}{5}-\dfrac{3}{4}=\dfrac{16}{20}-\dfrac{15}{20}$$
$$=\dfrac{16-15}{20}$$
$$=\dfrac{1}{20}$$

39. **VIDEO GAMES** Corey bought a video game that cost $37.85 and paid with $40.00. Is $2, $3, or $4 a reasonable amount for how much change he received?

37.85 → 38.00
40.00 − 38.00 = 2
$2 is a reasonable amount for how much change he would receive.

PREREQUISITE SKILL Round each number to the nearest half.

41. $7\dfrac{4}{9}$

$$7\dfrac{4}{9}=7\dfrac{1}{2}$$
4 is about half of 9. So round to the nearest $\dfrac{1}{2}$.

43. $2\dfrac{5}{6}$

3
5 is almost as large as 6. So round to the next whole number.